Please Amend The Claims as Follows:

1. (Currently amended) An improved multiple sub-band processing system having a first M-channel synthesis filter bank followed by a second L-channel analysis filter bank, for the case of L=K*M where K and M are positive non-zero [~~is an~~] integers, L is a down-sampling factor of the second analysis filter bank, and M is an up-sampling factor of the first synthesis filter bank, the improvement comprising:

combining the first synthesis filter bank with the second analysis filter bank in accordance with the equation: $Y_k(z) = H^1_{p,[k](I*M-m)mod([k]K*M)}(z)*(\downarrow K)*z^{-I} * F_{p,m}(z)*X_m(z)$, where $Y_k(z)$ is a discrete transfer function indexed by k where k= 0 to L-1; $H^1_{p,k(I*M-m)mod(K*M)}(z)$ is the Z transform of the first M-channel synthesis filter bank for I = 0 to K-1 and m is an index from 0 to M-1; $(\downarrow K)$ is a down-sampling operator of factor K; z^{-I} is a delay transform function delayed by I samples where I is an integer between 0 to K-1; $F_{p,m}(z)$ is a transform function derived from $F_m(z)$ in which m is the index from 0 to M-1; and $X_m(z)$ is an indexed transfer function.

2. (Currently amended) The improved multiple sub-band processing system of claim 1, wherein the combined filter bank includes [~~M, K output~~] M output demultiplexers each having K outputs ~~operating at a rate of f_{clock}~~.

3. (Canceled)

4. (Currently amended) In a multiple sub-band processing system having a first M-channel synthesis filter

bank followed by a second L-channel analysis filter bank, for the case of L=K*M where L is a down-sampling factor of the second analysis filter bank and M is an up-sampling factor of the first synthesis filter bank, and wherein the first synthesis filter bank is combined with the second analysis filter bank, the first synthesis filter bank comprising:

M polyphase filters, wherein the m^{th} polyphase filter receives an input signal $X_m(z)$ and generates a filtered output signal;

[~~K~~] down-samplers having inputs connected to [~~the~~] [~~m~~th] respective outputs of the polyphase filters, by way of a delay circuit, that down-sample by a factor K the filtered output signal~~; and an~~ to provide an equivalent filter that operates in accordance with the equation $Y_k(z) = H^1_{p,[k](I*M-m)mod([k]K*M)}(z)*(\downarrow K)*z^{-I}*F_{p,m}(z)*X_m(z)$, to generate K polyphase outputs, where $Y_k(z)$ is a discrete transfer function indexed by k where k= 0 to L-1; $H^1_{p,k(I*M-m)mod(K*M)}(z)$ is the Z transform of the first M-channel synthesis filter bank for I = 0 to K-1 and m is an index from 0 to M-1; $(\downarrow K)$ is a down-sampling operator of factor K; z^{-I} is a delay transform function delayed by I samples where I is an integer between 0 to K-1; $F_{p,m}(z)$ is a transform function derived from $F_m(z)$ in which m is the index from 0 to M-1; and $X_m(z)$ is an indexed transfer function.

AMENDMENTS TO THE CLAIMS:

Claims 1, 2 and 4 are currently amended; claim 3 is canceled; and Claims 1, 2 and 4 remain in the application.

Remarks

The abstract has been amended to have between 50 -150 words and is in narrative form as required by the examiner.

Allowable Subject matter

Claims 1-4 are objected to because of formalities. Claim 3 has been canceled, and claim 1 has been amended by replacing "where K is an integer" with "where K and M are positive non-zero integers". Also, claim 1 now defines all the parameters of the equation: $Y_k(z) = H^1_{p,(I*M-m) \bmod (K*M)}(z)*(\downarrow K)*z^{-I} *F_{p,m}(z)*X_m(z)$.

Regarding claim 2, this claim now recites " wherein the combined filter bank includes M output demultiplexers each having K outputs " therefore the interrelationship objection no longer applies.

Regarding claim 4, this claim has been amended to define the interrelationship the between the M polyphase filters and the down-samplers that provide the equivalent filter, therefore the interrelationship objection no longer applies.